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AN ANOMALOUS OVARY.

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While engaged in a study of the Araceae the writer undertook to study some specimens of *Stenospermation popayanense*, which were kindly supplied by Mr. Fred J. Seaver, of the New York Botanical Gardens. The genus in question is described by all writers on the subect as having perfect flowers. Two species, other than the one mentioned, are described and figured by Schott in his Genera Aroidearum; but no description is there given of *S. popayanense*. The two species described have a unicarpellate ovary, with extremely thick wall, and four hypogenous stamens surrounding it. In one of the species, however, the filaments cling to the wall of the ovary so that the anthers appear to be sessile and epigynous, and in both the stamen is greatly reduced. *S. popayanense* is mentioned by Ender in his Index Aroidearum, but is not described. De Candolle mentions it as having hermaphrodite flowers.

The entire spadix is covered with crowded, lozenge-shaped blossoms, an examination of which reveals the fact that each is simply a short, truncate pistil, with a somewhat projecting, glandular stigma at the summit. The pistil is never surrounded by stamens, and so far as the first examination extended the blossom appeared to be purely pistillate and the plant dioecious. On sectioning the pistil longitudinally it is seen that there is a rather broad stylar canal, narrowed at the stigmatic end above, and again below just above the entrance of the carpellary cavity. The broader portion is filled with a mass of very regularly arranged glandular hairs, which of course serve as conducting tissue. There is a projection in the central portion of the carpellary cavity, and around this are grouped from four to eight erect, anatropous ovules. In many of the blossoms dissected, however, the ovules are replaced by a group of short, sessile stamens, although in these cases the exterior appearance of the ovary, (if the name may still be applied), is entirely unaltered, and the internal anatomy is unaltered, except for the substitution of stamens for ovules.

Many questions have been asked the writer, by those who have seen this curious phenomenon, as to whether it is an abnormality peculiar to this individual plant, or whether it belonged generally to the species in question. To these queries he can as yet only reply that, as he has been able to find but one individual belonging to the species, and as he has seen but one crop of blossoms coming from that individual, he cannot say definitely what the peculiarity means. It has been asked also what is the fate of the stamens in question. As mature, and apparently perfectly normal pollen grains were found in the anthers, it is assumed that they are functional. Whether the filament later lengthens out, and the anthers protrude from the neck of the "pistil," the writer is unable to say. All pistils studied were in the same stage of development, and until more material is obtained the later stages can only be guessed at. Perhaps the pollen is shed in the interior of the carpel. A certain small percentage of carpels contain both stamens and ovules, so that the latter process might result in the

setting of a certain amount of seed, though cross-fertilization would of course be inhibited. These questions await further study, which of course necessitates waiting for material in the proper stage of development. It is hoped that this may ere long be obtained.

Should the peculiarity turn out to be constant for the species, or even for one individual of the species (in which case it should probably be interpreted as reversionary in its nature), it may perhaps have some slight bearing on the question of the relation of the floral parts. The writer has long been inclined to question the accepted terminology which defines the pistil as a sporophyll, and to regard the ovule rather as the sporophyll, and the carpellary wall as a part of the leaf system of the flower, so modified as to become a protective envelope for the ovule. Under this view the stamen and ovule would be regarded as complementary sporophylls, and the pistil would be regarded as a complex organ, part of which belongs to the system of floral leaves, and part to the system of sporophylls. There are many analogies that would seem to indicate the correctness of this view. The occasional occurrence of ovules on the inner carpellary wall, ("parietal placenta"), does not prove the carpel to be a sporophyll any more than does the occurrence of stamens on petals prove the petal to be a sporophyll. The normal position for a stamen is in the axil of a floral leaf, and, if the theory here advanced be correct, the normal position of the ovule is similar. That both are sometimes mounted on the leaf itself does not in any way effect the morphological significance. The substitution of stamens for ovules in Stenospermation, might perhaps be taken as an indication of the essential homology between the two. The stamen, in this case, has simply, by some strange perversion, developed in the axil of the inner, instead of the outer leaf.